

A Market Approach to Research Integrity

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Introduction: Supply Side Ethics

The standard approach to research integrity can be characterized as supply side ethics because of its emphasis on individual persons who supply research products. These suppliers—researchers—are screened, educated, exhorted, given incentives, and as a last resort threatened in the interest of getting them to be honest, to keep careful, accurate records, to test their hypotheses fairly, to use reporting techniques fairly, and to train their subordinates and encourage their colleagues in turn to do likewise. This paper discusses the effects of the *demand for research* on the collective integrity of research fields.

Briefly, the argument is as follows: where research takes place within a market for research products, effective demand in this market will affect the distribution of knowledge produced. Therefore, the body of scientific knowledge will be skewed by demand. The analysis here suggests that this skew can result in a form of malignant bias resulting from demand. Paradoxically, this form of bias occurs in the absence of corrupt researchers, research designs or grantors. It is a form of bias nonetheless, since it can lead to misleading research-based knowledge and less than optimal policy decisions. Thus, it should be of concern to researchers in research ethics.

There is a Market for Research Products

In the market for research, scientists are the suppliers and those who offer to pay research expenses through grants or contractual funding are the “consumers” of research products. Any offer to fund research activities constitutes a demand for the kind of research that is expected to result from those activities. Principal Investigators can be seen as entrepreneurs who compete with their peers for contracts. Those who are successful in obtaining contracts become suppliers and then use the resources they have obtained to hire labour and buy raw materials—essential components in the production of research.

Objection: funding cannot produce science

It is normal to accept that there is a competitive market for research funding but to separate this conceptually from the idea of a market for research products. Knowledge, as usually understood, is not something that can be sold to order like a car or a bunch of carrots. On this standard model, scientists choose to pursue particular research questions because of their intrinsic value and expected fertility. Funding comes to those with skill who choose a fruitful line of inquiry, as a reward for past

successes and to support the *promise* of future productivity. But there is no simple buyer-seller transaction. Any appraisal of research products themselves must be based on examination of the autonomous technical pursuit of the research craft: experimental design, data collection, record keeping and the interpretation of results. There is of course an acknowledgement that getting research funding is a competitive pursuit, but the funding transaction is seen as completely external to the generation of research products. In other words, there may be a market for funding but there is no market for knowledge. This conventional separation is unsatisfactory because funding affects the actual content of research products in at least three ways.

How does demand affect research knowledge?

First, some researchers will modify their research questions, design and methodology to receive funding. It is not difficult to think of colleagues who have changed their research questions or design slightly to obtain the interest of a funding agency. Indeed, at least in the social sciences, often the tail wags the dog, with research proposals and even research programs developed in response to offers to fund. Generally this is not considered to be dishonorable, provided the proposed studies are intrinsically legitimate and carried out fairly.

Second, researchers who really want to pursue research interests or designs that do not fit some effective demand for knowledge are like sellers in a market with no buyers. They can still conduct research, but only to the extent that personal funds or their general institutional budgets are adequate to support its costs. In general, smaller budgets will limit the scale and type of work they can do. Since there is always competition for scarce research dollars, grantors have the prerogative of declining proposals from researchers who do not offer what is demanded. In other words, the market for research is a buyer's market.

Third, if we look at a researcher's life cycle, the effect of demand is most strongly felt at the early stages of a career. Doctoral and post-doctoral researchers usually must serve as apprentices to a more senior researcher to begin to earn a living in the research trades. Because it is an apprenticeship phase, junior researchers are expected to develop a package of skills and competences that will then affect their approach

to doing research over the course of a professional life. On the other hand, a senior researcher with better funding is likely to attract more and brighter young scholars than his less generously funded colleagues. Thus the demand for knowledge, operating through the demand for junior collaborators and research assistants, plays a part in developing the competences and commitments of each new generation of researchers. Demand not only has an immediate market effect but also a life cycle effect on the researcher's capacity for—and commitment to—future research projects. Again, it is hardly blameworthy for a junior researcher to consider the size of available fellowships before choosing to work in a particular sub-discipline or laboratory.

Demand calls forth its supply

In all of these ways, the economic demand for research will affect the supply of research products developed. To accept this conclusion we do not have to believe that the demand for research can produce its own supply (although this is the way an economist might put it), nor that research in the absence of funding is impossible. We must only accept that some researchers will respond to the incentives offered by granting agencies and that those who do so will be better situated to generate research than the rest. In other words, research flourishes in the presence of money, and generating research products without money is very difficult and rare. Grantor sovereignty certainly is not absolute; it is no more than a form of consumer sovereignty, resulting from the prerogative of buyers in any market to demand the products that give them most satisfaction.

Contrast the demand for corrupt research

It is worth emphasizing that the effect of demand on knowledge does not entail any individually discreditable conduct on the part of either buyer or supplier. A demand for corrupt research products probably exists. For instance, a grantor with a preferred ideology may put pressure on a researcher to design not quite fair tests of hypotheses, to address data selectively, or to misreport or over-generalize findings. Perhaps more subtly but no less deceitfully, a pharmaceutical company might commission more than one study of a drug, publicize only those favorable to its product, and bury the rest. Each of these is an example of corrupt(ing)

demand, but neither is our concern here. While the demand for corrupt research is certainly worthy of study, a discussion of its extent and effects does not lie within the scope of this paper. Throughout this discussion our concern is rather with the demand for legitimate, honest research products to be supplied by researchers whose integrity in conducting each separate research project is not under question. The problem raised here does not result from any individual wrongdoing but rather centers on a robustly collective effect of individually blameless acts (1, 2).

What is the Problem?

Those who accept the analysis so far will concede that the market for research funding affects the distribution of research products; however they may still deny that this is an ethical problem. For instance, if one subscribes to the “marketplace of ideas” model of truth (cf. 3, 4), then a free market for ideas, for their sponsorship and dissemination—such as has been described—is the most efficient system for allowing the truest views to emerge. As long as each seller and buyer of ideas is free to make her own choices for her own reasons, the invisible hand of the market will guarantee that the best (i.e., the most sought after) ideas flourish. If an area of research truly has merit, surely some clever grantor will see that there are returns to be obtained and enter the market. This model presupposes that within a free market for research funding, the best quality science will receive the best funding simply by virtue of its quality.

Two different rebuttals to a marketplace of ideas model are offered here; each based on an accepted standard for assessing the inherent quality of research products, independent of market demand. The first argument is democratic, while the second is elitist.

The democratic argument: knowledge is a public good

Although effective demand for research is exerted by grantors, research products do not serve only grantors. Knowledge is a *public good* in at least three different senses.

First, knowledge is public in the technical economist’s sense: knowledge products are often non-excludable or offer positive externalities to people other than the purchaser. Research products are not only there to be used by a

purchaser, they also become part of the common stock of knowledge. Research produced for one purpose will often have unexpected “external” benefits and uses. (Proprietary approaches to knowledge present only an apparent challenge to this argument, because they do not change the underlying quality of knowledge as public, they only change the way our legal systems sanction its use.)

Second, knowledge is public in a proprietary sense. That is, the public owns it by virtue of having paid for its production through taxes. Not only do public grant funds pay for much research directly, there are also many implicit forms of subsidy that enable scientific education and practice—the public school and university system being only one large example.

Third, knowledge is public in a normative sense. We pursue research as a calling—as something we do for our fellow humans—as much as for our own livelihood and reputation. The cobbler usually does not take up this trade so that the feet of the world may be shod, but researchers often are motivated by a desire to contribute to the progress of humankind’s knowledge. Most of us believe that knowledge exists to serve society or humanity, not only for the “consumers” who pay for the production of research.

A free market of interactions between purchasers and suppliers of research (or any) products might perhaps optimize the satisfaction of direct parties to these transactions. However, the interests of the public are not directly represented in reaching this theoretical market equilibrium. A bias away from the public interest will result, to exactly the extent that research-demanding grantors and the broader research-using public have systematically different interests.

The elitist argument: good science is an autonomous pursuit

A body of scientific knowledge is not simply a collection of individual researchers’ products. It is produced by a community of scientists. Individual researchers may have unconscious biases (5) and may certainly commit honest errors. These flaws can only be corrected from another’s perspective. Thus the quality of scientific *knowledge* emerges from interaction among knowledge producers, not only from the quality of any one producer’s activity. This self-correcting feature of scientific knowledge is

historically traced to the work of Herschel, Merton and Popper (6, 7, 8), but the motif of a self-correcting, autonomous body of science-producing experts is also implicit in Kuhn's classic account of progress through revolution and in post-Kuhnians such as Laudan (9, 10). If one subscribes to any such elitist model, the proper advance of scientific knowledge results from the intellectual judgements made by a community of qualified researchers, not from the economic demand for research. If aggregate demand for research does not correspond to the range of projects that researchers would choose to pursue on solely intellectual grounds, then to this extent, the body of knowledge being produced will exhibit a form of bias.

Why does collective bias matter?

Ultimately, the main reason we care about integrity of research at the individual level is that the intellectual adequacy of a body of research is vitiated by research corruption. Corrupt practices produce dubious, misleading results. From either a democratic or an elitist perspective, we should care about collective bias for exactly the same reason—because a body of research formed by demand may mislead researchers, students, the public at large, and policymakers. In any field based on multi-causal or probabilistic systems, the problem of collective bias resulting from the demand for research should be of particular concern.

Case: Causes of Disease

Sylvia Tesh remarked in 1988 that studies based on a contagion model of disease were best funded, most prestigious and generally dominant in American medical research (11). Today (in 2001) contagion has been joined or perhaps displaced by genetics as the dominant cause of disease to be researched. A third model underlying research studies is lifestyle theory, the idea that modifiable personal behaviors result in illness. All three of these causal models fall under an overarching individualistic framework, where disease is located within the person, whether in her genes, in a viral or bacterial agent she has taken in, or in her choice of (un)healthy behaviours. By contrast, environmental, economic and psycho-social causes of disease receive far less attention (and far less funding). Evidence from other First World countries suggests that these would be highly fruitful areas of inquiry. To take only one instance, the

Whitehall studies in Great Britain showed that age-adjusted mortality from nearly all causes varied inversely and quite significantly with *civil service grade* even when controlled for individual health variables such as smoking. In other words, the higher the civil service grade, the less likely these civil servants were to get ill or to die, all other things being equal. Similar relationships between social status and biochemical health indicators have been found in experimental monkeys (12).

The nearly exclusive emphasis on one or two modes of causation is problematic because the others might equally and perhaps more cheaply lead to better public health. If prevention is intrinsically better than cure, then controlling large scale correlates of disease is better than using genetic or pharmaceutical technology to treat disease. To make this concrete: a breast cancer gene may be significantly correlated with breast cancer, but possibly not more so than poverty, radiation, or other environmental and economic factors. If the public and policymakers become aware of the first relationship but few researchers are pursuing the rest, a misplaced emphasis will be put on genetic therapy and too little effort on other possible methods for addressing this disease.

As long as there is a predominant demand for genetic research, we will continue to get genetic results. What is more, a disproportionate number of apprentice researchers will continue to be trained in the area of genetic medical research (not environmental or social medicine) and to develop a commitment to being *geneticists* rather than some other kind of health researcher. They in turn will have incentives to conduct and to support future medical research on a genetic model. Thus demand is not only affecting research in the present, it is also influencing the shape of the future research producing community.

Why is it an Integrity Problem?

If the analysis of the paper is accepted, then the demand for research poses some kind of social problem. Yet as an *ethical* problem it is paradoxical because we cannot find the wrongdoer. For this form of research corruption to arise, there need not be any demand for corrupt research nor any suppliers of research who are willing to be corrupted. No personal misconduct or violation of individual research autonomy needs to take place. There must only

be a situation where funding organizations freely select the type of research they will fund from among various projects and models being proposed. In other words, corruption of research due to the demand for research is a robustly collective problem; it is not a problem that can be resolved by making individual people behave more honestly or fairly. The reader may wonder, therefore, whether this is actually a problem of research integrity, or just some kind of market imperfection or political problem. The reply to this last objection lies in the professional status of researchers.

Research is a profession

Professionals are characterized by most ethicists as the bearers of many social privileges including a monopoly on legitimate practice within their domain, control of entry into that domain, and evaluation of one another's competence (13). Following this definition, scientific researchers are professionals. In exchange for their privileges, the members of a profession are collectively responsible for the character of their practice as a whole: they must ensure that it benefits a society as much as possible, and at least that it does no harm. If researchers are professionals then they are not only responsible for doing research honestly, they are also custodians of their realm of research. Collective responsibility of this kind has been accepted by traditional professions including medicine and law, and by many newer ones such as nursing, accounting and insurance (14). Of course researchers in a field may not be the *only* persons responsible for the collective integrity of that field.

What can be done?

In this paper I have called attention to a type of failure of research integrity that has not yet been addressed in research on research integrity. I do not pretend that it will be easy to address the problem of collective integrity in knowledge production: indeed, intrinsically collective problems tend to be philosophically and practically difficult (cf. 2). However, just because a problem is not easy to fix, this does not mean we should ignore it.

The existence argument for market effects on the integrity of research must be supplemented with research on the magnitude of these effects. Such empirical studies could document the effect of demand on research programs through

historical and international comparisons, qualitative social studies of market effects on mentoring and career choice, or quasi-experimental studies of factors involved in research problem choice, for example. Finally, I do not expect it will be easy to fund research about collective market effects on research integrity, since funding agencies can hardly be expected to have an interest in demanding this kind of knowledge that would, after all, challenge their own role in directing the course of knowledge production. Such research would, however, offer valuable insight to the research professions and to the public.

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